

IN THE CLAIMS:

1 1. (Original) A device for sensing a gas, the device comprising a plastics housing
2 moulded in situ around at least one portion of a conducting lead frame, the housing defining an
3 enclosure and being provided with means for enabling gas flow into the enclosure, and at least
4 one gas sensitive element within the enclosure mounted to the conducting lead frame, wherein
5 the conducting lead frame comprises connection leads which are accessible through, and are at
6 least partially encapsulated by, the wall of the housing.

1 2. (Currently Amended) A device for sensing a gas, the device comprising at least
2 one gas sensitive element contained within a flameproof, plastics housing supporting a flame
3 arrestor which enables gas to flow into the interior of the housing, and the gas sensitive element
4 [[[s)]] being connected to conducting leads which are accessible through, and are at least
5 partially encapsulated by, the wall of the housing, the encapsulating wall having sufficient
6 thickness such that the housing will not allow the propagation of an ignition source from within
7 the device to the ambient atmosphere, under working conditions.

1 3. (Original) A device according to claim 2, wherein the plastics housing is
2 fabricated by moulding in situ the plastics material directly around the conducting leads.

1 4. (Currently Amended) A device according to claim 2 ~~or claim 3~~, wherein the
2 flame arrestor is located above the gas sensitive element[[s)], the conducting leads being
3 accessible~~, for example extending out,~~ through a side wall of the housing.

1 5. (Original) A device according to claim 4, wherein the conducting leads are
2 coupled with respective contacts located in an integral extension of the housing.

1 6. (Currently Amended) A device according to ~~any of claims~~ claim 2 to 5, wherein
2 the conducting leads are provided by a conducting lead frame fabricated prior to encapsulation
3 by the plastics housing.

1 7. (Currently Amended) A device according to ~~any of claims~~ claim 2 to 6, wherein
2 the flame arrestor is a metal mesh.

1 8. (Currently Amended) A device according to ~~any of claims~~ claim 2 to 7, wherein
2 the flame arrestor is joined to the plastics housing by a process of thermal bonding around its
3 perimeter.

1 9. (Currently Amended) A device according to ~~any of the preceding claims~~ claim 2,
2 further comprising at least one filter in order to remove contaminants from the gas flow into the
3 device.

1 10. (Original) A device according to claim 9, which further comprises means for
2 retaining components located outboard of the flame arrestor.

1 11. (Original) A device according to claim 10, wherein the retaining means is
2 provided by a bezel which fastens mechanically to the housing.

1 12. (Currently Amended) A device according to ~~any of claims~~ claim 9 to 12, wherein
2 the filter, or at least one of the filters, removes hydrogen sulphide from the gas flow into the
3 device.

1 13. (Currently Amended) A device according to ~~any of claims~~ claim 9 to 12, wherein
2 at least one of the filter (s) is inboard of the flame arrestor.

1 14. (Currently Amended) A device according to ~~any of the preceding claims~~ claim 2,
2 further comprising means for protecting one or more of the gas sensitive element ~~[[s]]~~ from
3 shock damage.

1 15. (Currently Amended) A device according to ~~any of the preceding claims~~ claim 2,
2 further comprising means for insulating the gas sensitive element ~~[[s]]~~ and electrical
3 connections, either in terms of electrical insulation or heat insulation, or both.

1 16. (Currently Amended) A device according to ~~claims~~ claim 14 and 15, wherein the
2 protecting ~~and/or insulating~~ means comprise at least one layer of shock absorbent and insulating
3 material.

4 17. (Currently Amended) A device according to ~~any of claims 14 to~~ claim 16,
5 wherein the shock absorbent ~~and/or insulating material~~ is glass wool.

1 18. (Currently Amended) A device according to ~~any of the preceding claims~~ claim 2,
2 further comprising a compensating element.

1 19. (Currently Amended) A device according to claim 18, wherein the ~~detecting~~
2 compensating element comprises a catalytic bead.

1 20. (Currently Amended) A device according to ~~any of the preceding claims~~ claim 2,
2 wherein the ~~or each~~ gas sensitive element ~~and/or compensating element~~ is positioned at least
3 partly within ~~[[a or]]~~ a respective recess in an interior wall of the housing.

1 21. (Currently Amended) A device according to claim 20, wherein the ~~or each~~ recess
2 also contains means for the protection and insulation of the gas sensitive element ~~and/or~~
3 ~~compensating element~~ positioned at least partly inside it.

1 22. (Currently Amended) A device according to ~~any of the preceding claims~~ claim 2,
2 wherein the thickness of the portion of the housing wall through which the conducting leads
3 extend is substantially at least 6 mm.

1 23. (Currently Amended) A device according to claim 1 ~~or claim 6~~, which further
2 comprises an electronic component mounted onto at least some of the portions of the conducting
3 lead frame not covered by the plastics housing.

1 24. (Original) A device according to claim 23, wherein the electronic component is a
2 memory component.

1 25. (Original) A device according to claim 24, wherein the electronic memory
2 component is an EEPROM.

1 26. (Currently Amended) A device according to claim 24 ~~or claim 25~~, wherein the
2 electronic memory component stores data relating to the or each gas sensitive element.

1 27. (Currently Amended) A device according to ~~any of the preceding claims~~ claim 2,
2 wherein the plastics housing comprises at least an inner portion and an outer portion, the outer
3 portion being moulded around the inner portion.

1 28. (Currently Amended) A device according to ~~any of claims~~ claim 1, ~~6 or 23 to 27~~
2 which further comprises a cap which covers at least some of the portions of the conducting lead
3 frame not covered by the plastics housing.

1 29. (Currently Amended) A device according to ~~any of the preceding claims~~ claim 1,
2 wherein the ~~or each~~ gas sensitive element is a semiconductor gas sensor.

1 30. (Currently Amended) A device according to claim 29, wherein the ~~or each~~
2 semiconductor gas sensor comprises a p-type mixed metal oxide semiconducting material of the
3 first, second and/or third order transition metal series and wherein the semiconductor gas sensor
4 is responsive to a change in concentration of carbon monoxide in the surrounding atmosphere
5 and to a change in concentration of oxygen in the surrounding atmosphere.

1 31. (Original) A method of manufacturing a device for sensing a gas, the method
2 comprising moulding a plastics housing in situ around at least one portion of a conducting lead
3 frame such that the housing defines an enclosure, providing the housing with means for enabling
4 gas flow into the enclosure, mounting at least one gas sensitive element inside the enclosure and
5 connecting it to the conducting lead frame, and providing the conducting lead frame with
6 connection leads which are accessible through, and at least partially encapsulated by, the wall of
7 the housing.

1 32. (Original) A method according to claim 31, wherein the plastics housing is
2 moulded around at least a portion of the conducting lead frame in two steps.

1 33. (Original) A method of manufacturing a device for sensing a gas, the method
2 comprising moulding a plastics housing in situ directly around a set of conducting leads,
3 mounting at least one gas sensitive element inside the housing and connecting it or them to the
4 conducting leads which are accessible through, and at least partially encapsulated by, the wall of
5 the housing, the encapsulating wall having sufficient thickness that the housing will not allow the
6 propagation of an ignition source from within the device to the ambient atmosphere, under
7 working conditions, and securing a flame arrestor to the housing which completes the flameproof
8 enclosure yet enables gas to flow into the interior.

1 34. (Original) A method according to claim 33, wherein the flame arrestor is joined
2 to the plastics housing by a process of thermal bonding around its perimeter.

1 35. (Cancelled)